NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

PEST MANAGEMENT

(Ac.)

CODE 595

DEFINITION

Utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.

PURPOSES

This practice is applied as part of a Resource Management System (RMS) to support one or more of the following purposes:

Enhance quantity and quality of commodities;

Minimize negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources, and/or humans.

CONDITIONS WHERE PRACTICE APPLIES

Wherever pests will be managed.

CRITERIA

General Criteria Applicable to All Purposes

Pest management plans shall be compatible with other components of a conservation plan and include appropriate mitigation techniques to reduce environmental risk.

All methods of pest management must comply with federal, state, and local regulations, including management plans for invasive pest species, noxious weeds, and disease vectors.

Pesticide management activities associated with this standard will be in accordance with label directions, including precautionary statements regarding water resources to limit leaching and runoff losses of pesticide residues. Compliance with the Food Quality Protection Act (FQPA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Worker Protection Standard (WPS); and Interim Endangered Species Protection Program (H7506C) is required for chemical pest control.

Integrated Pest Management (IPM) that strives to balance economics, efficacy, and environmental risk, where available, shall be incorporated into planning alternatives. Integrated Pest Management is a sustainable approach to pest control that combines the use of prevention, avoidance, monitoring and suppression strategies, to maintain pest populations below economically damaging levels, to minimize pest resistance, and to minimize harmful effects of pest control on human health and environmental resources. Integrated Pest Management suppression systems include biological controls, cultural controls, and the judicious use of chemical controls.

An appropriate set of mitigation techniques must be planned and implemented to reduce the environmental risks of pest management activities in accordance with quality criteria in the local South Dakota Technical Guide (SDTG). Mitigation techniques include practices like a Filter Strip or Conservation Crop Rotation, and management techniques like application method or timing.

All methods of pest management must be integrated with other components of the conservation plan. The Natural Resources Conservation Service (NRCS) employees, in South Dakota (SD), will not make field specific pesticide recommendations.

Persons who review or approve the pest management component of a conservation plan shall be certified through a certification program acceptable to NRCS as described in General Manual, Title 180, Part 409, and SD supplement SD409, Exhibit 1.

Preliminary Field Risk Assessment (on all fields)

Planners will identify fields that are susceptible to surface or groundwater contamination. Water Quality Risk Assessment maps will be developed identifying shallow aquifers and set backs associated with surface water resources on all fields with the exception of the following two situations:

- Water Quality Risk Assessment maps are not required for pasture or grazed range. Runoff or leaching risk ("R" – Runoff and "L" - Leaching) designations may be referenced in the legend and posted directly on conservation plan maps for pasture and grazed range;

- Windbreak plantings less than 10 acres in a block do not require Water Quality Risk Assessment maps or a risk evaluation with screening tools such as the SD Pesticide Screening Spreadsheet (PSS) or Windows Pesticide Screening Tool (WIN-PST).

A preliminary evaluation using the following Steps 1-3 will be made for each field to identify if the field poses a significant potential to contaminate an identified groundwater or surface water resource.

1. Fields located over shallow aquifers as defined in SD Codified Law 34A-3A-24 will be considered highly vulnerable for pesticide leaching. The Web Soil Survey (WSS) will be used to identify the leaching risk for soil map units in each county in SD. Saturated Hydraulic Conductivity (Ksat) is a soil property (ease of soil pores to transmit water) that will be used to indicate leaching risk. Soils map units that have a Ksat value of 10 micrometers/sec (µm/sec) or greater, and are on slopes less than 6 percent, would be considered to have a "High Leaching Risk.' The WSS is located at: http://websoilsurvey.nrcs.usda.gov/app/.

   If pest management plans are developed in conjunction with nutrient management plans on permitted facilities in SD; the Department of Environment and Natural Resources (DENR) will be contacted for identification of application fields located over shallow aquifers.

2. For surface water protection, areas of fields within 100 feet of a noncropped wetland, lake, river, stream, or a conveyance to these waters should be considered to have a potential to contribute contaminates to surface waters. A conveyance may be defined as a ditch, tile inlet, intermittent stream, waterway, or un-vegetated channel.

3. If Steps 1 and 2 are negative, then no further water quality screening is necessary. If, however, a significant groundwater resource is identified or a field has a potential to contribute to surface water contamination, the field will be evaluated with the SD PSS or WIN-PST.

Additional Criteria to Protect Quantity and Quality of Commodities

As an essential component of both commodity-specific IPM and IPM general principles, clients shall be encouraged to use the minimum level of pest control necessary to

meet their objectives for commodity quantity and quality.

All appropriate state, federal, and local standards to protect against contamination with transgenic crops, noxious weeds, etc., will be followed. Organic crops will abide by applicable local, state, or federal standards.

Additional Criteria to Protect Soil Resources

In conjunction with other conservation practices, the number, sequence and timing of tillage operations shall be managed to maintain soil quality and maintain soil loss at or below the soil loss tolerance (T) or any other planned soil loss objective. Current erosion prediction technology in Section I of the SDTG and Quality Criteria in Section III shall be used to evaluate erosion potential for wind, water, and concentrated flow erosion.

Pesticides will be applied according to label directions, including precautionary statements, to limit soil pesticide residues and negative effects on future crops or non-target plants/crops, animals, and humans.

Additional Criteria to Protect Water Resources

Pest management environmental risks, including the impacts of pesticides in ground and surface water on humans and non-target plants and animals, must be evaluated for all identified water resource concerns.

Pesticide handling, application, and disposal shall be conducted in a manner consistent with state law and product label directions. Anyone who handles, applies, or disposes of a pesticide is required to perform these activities in accordance with label instructions and/or state law; including but not limited to the precautionary statements regarding water resources to limit leaching and runoff losses of pesticide residues.

Anyone handling or applying pesticides must comply with requirements of operational area containment as stated on the product label and state rules administered by the SD Department of Agriculture (SDDA): Operational Area Containment (ARSD § 12:56:17).

State rules require operational containment if:

More than 1,500 lbs. of active ingredient is mixed in the same location during one (1) calendar year or; either concentrate or diluted pesticides are cleaned, washed , or rinsed from containers or from application, handling, storage, or transportation equipment for over 30 days accumulated during a calendar year ; or

If pesticides are handled within:

- 150 feet of a lake, stream, streambed, or wetland; or

- 150 feet of a well; or

- 200 feet of populated buildings, either commercial or residential premises, excluding the owner or operator’s residential or commercial buildings; or

- 500 feet of a well used as a public water supply.

The potential loss of pesticides to surface and groundwater and the negative impacts to humans, plants, and animals will be evaluated using the NRCS PSS or the WIN-PST.

If the PSS evaluation indicates that a pesticide application has an Extra High, High, or Intermediate hazard potential (leaching, solution runoff, or adsorbed runoff); appropriate mitigation measures and conservation practices will be implemented (refer to guidance on mitigation for pesticide losses). If the PSS or WIN-PST evaluation indicates that a pesticide application has a low or very low hazard potential, no additional mitigation measures are required. Mitigation measures must not already be accounted for in the risk assessment (i.e., PSS evaluation).

MITIGATION FOR PESTICIDE LOSSES

An appropriate set of mitigation techniques must be planned and implemented to reduce the environmental risks to surface and ground water due to pest management activities in accordance with water quality criteria in Section III of the SDTG. Mitigation techniques listed in Appendix A include Conservation Practices such as, Filter Strips; Conservation Crop Rotations; pesticide management techniques, and pesticide product label requirements or recommendations.

Mitigation measures must be appropriate for the pesticide loss pathway on the site. These include leaching and surface loss due to erosion and/or runoff. Pesticide loss is likely to occur by detachment and transport of pesticides sorbed to sediment or in solution. Transport due to water erosion and runoff can occur in sheet flow or concentrated flow.

Please refer to Table 1 for the minimum number of mitigation measures and Appendix A for a list of mitigation measures. Mitigation measures include both pesticide management measures and conservation practices that are appropriate to mitigate potential pesticide loss for the pathway(s) of concern. Refer to pesticide label requirements for setbacks and other restrictions.

Table 1 Additional Mitigation Measures[1/]

(measures not accounted for in PSS or WIN-PST)

Hazard Potential (Leaching, Solution Runoff, and Adsorbed Runoff	Mitigation Measures including Pesticide Management Techniques[2/] and Conservation Practices[3/] (+ or + measures)
Intermediate	1 or more
High	2 or more
Extra High	3 or more

[1/]Conservation practices and pesticide management techniques must be appropriate for each pesticide loss pathway(s) applicable on the site. Mitigation measures that eliminate use of pesticides or are rated with two pluses (++) are adequate as stand alone measures for the pathway(s) of concern.

[2/]Pesticide management measures must be included in the integrated pest management plan/job sheets used to document practice implementation.

[3/]Conservation practices must be included in the conservation plan for the field(s)/site(s).

Additional Criteria to Protect Air Resources

Pesticide applications shall be made according to label directions including precautionary statements and University recommendations regarding air resources to minimize volatilization and drift and transport through wind erosion that may negatively impact non-target plants, animals, and humans. Method of application and pesticide formulation shall be appropriate for the conditions and consistent with pesticide label requirements. Wind speed, temperature, humidity, and other climatic factors will be monitored as applicable on pesticide label directions. Please refer to Appendix A for mitigation measures that are effective at minimizing wind erosion.

Additional Criteria to Protect Plant Resources

Clients shall be encouraged to pay special attention to pesticide label instructions including those directed at:

Preventing misdirected pest management control measures that negatively impact plants. When endangered species may be impacted, pesticide applicators shall consult the pesticide product label and their county's Endangered Species Program bulletins for recommendations concerning pesticides and endangered species. Information regarding endangered species and individual county bulletins is available by contacting the SDDA at 1-800-228-5254 or at http://www.state.sd.us/doa/das/hp-pest.htm.

Appropriate climatic conditions, crop stage, soil moisture, pH, and organic matter in order to protect plant health.

Limiting pesticide residues in soil that can carry over and harm subsequent crops.

Additional Criteria to Protect Animal Resources

Clients shall adhere to pesticide label directions, including precautionary statements and University recommendations regarding grazing, haying, and feeding restrictions and other items necessary to minimize negative impacts to wildlife and domestic animals. Clients shall adhere to pesticide label directions including precautionary statements and University recommendations to avoid negative impacts on non-target insects including label statements directed at pollinating insects. If a pesticide carries a hazard statement indicating that the product may be toxic to bees, follow label instructions and take appropriate precautions. Information regarding the location of registered commercial apiaries within the area of the proposed site of application is available from the SDDA at http://www.state.sd.us/doa/das/apiary_maps.htm or by calling 1-800-228-5254.

Additional Criteria to Protect Humans

Pesticide applications shall be made according to local, state, and federal regulations, label directions, including precautionary statements, and University recommendations to minimize negative impacts to humans including those directed at:

Re-entry intervals (REI's) for fields treated with pesticides.

Proper storage, handling, and disposal of pesticides, pesticide residues, and pesticide containers.

Proper protection to avoid back-siphoning into water wells from sprayer tanks and irrigation systems.

Use Personal Protective Equipment (PPE) as prescribed by the pesticide product label during mixing/handling, application, and re-entry. Refer to the product label for the required PPE and appropriate use of the equipment before handling any pesticide product. Individuals involved in handling and application of pesticides should periodically inspect PPE for integrity and ample supply to insure personal safety.

Private or commercial pesticide applicators as defined in SDCL 38-21-14 are required to be certified and licensed by the SDDA.

All aspects of the Pesticide Worker Protection Standard must be observed. Details regarding the use the Pesticide Worker Protection Standard are available from:

United States Environmental Protection Agency (EPA)
Pesticides: Health & Safety
http://www.epa.gov/pesticides/safety/workers/workers.htm

SDDA - Division of Agricultural services
http://www.state.sd.us/doa/das/Comp/worker_protection.htm
Phone: 1-800-228-5254

CONSIDERATIONS

The following IPM principles should be considered when appropriate:

Agronomic management measures that will reduce plant stress and improve plant vigor will increase the plant's overall ability to tolerate pests. These measures include adequate plant nutrients and soil amendments, residue management that optimizes soil moisture, proper soil conditions (compaction and tilth), proper irrigation management on irrigated land, and other measures that optimize plant vigor.

When chemical control is necessary consider efficacy and pesticide characteristics such as solubility, toxicity, degradation products, mobility, persistence, adsorption, and relationships to site characteristics such as soil, geology, depth to water tables, and proximity to surface water. Also consider

slope, climate, and sensitive areas to determine the potential impact on water quality.

Consider present soil moisture, anticipated weather conditions, and irrigation plans to achieve the greatest efficacy and reduce potential for offsite transport.

Consider using banded or spot treatment of pests where appropriate to reduce costs and environmental risk.

Consider method of pesticide application such as ground or aerial spraying, chemigation, wicking, application of granules, etc., since the degree of drift and volatilization will vary considerably by method.

Prevention, such as using pest-free seed, cleaning tillage, and harvesting equipment between fields, irrigation scheduling to avoid situations conducive to disease development, etc.

Avoidance, such as using pest resistant varieties, crop rotation, trap crops, etc.

Monitoring, such as pest scouting, soil testing, weather forecasting, etc., to help target suppression strategies and avoid routine preventative pest control.

Suppression, such as cultural, biological and chemical controls, that can reduce a pest population or its impacts. Chemical controls should be used judiciously in order to minimize environmental risk and pest resistance.

On irrigated land, irrigation water management should be designed to minimize pest management environmental risk.

PLANS AND SPECIFICATIONS

The pest management component of a conservation plan shall be prepared in accordance with the criteria of this standard, detailed in the documentation guide and shall describe the requirements for applying the practice to achieve its intended purpose(s).

As a minimum, the pest management component of a conservation plan shall include:

Plan map and soil map of managed site, if applicable (use RMS plan maps if available).

Location of sensitive resources and setbacks, if applicable (use RMS plan maps if available).

Environmental risk analysis, with approved tools and/or procedures, for probable pest management recommendations by crop (if applicable) and pest.

Interpretation of the environmental risk analysis and identification of appropriate mitigation techniques.

Operation and maintenance requirements.

OPERATION AND MAINTENANCE

The pest management component of a conservation plan shall include appropriate operation and maintenance items for the client. These may include:

Review and update the plan periodically in order to incorporate new IPM technology, respond to cropping system and pest complex changes, and avoid the development of pest resistance.

Maintain mitigation techniques identified in the plan in order to ensure continued effectiveness.

Prevent back-siphoning of pesticide mixture into water supply. When adding water to spray tanks, keep an air space between water supply hose and spray tank.

Pesticides must be stored in original labeled containers.

Storage and disposal of pesticides, pesticide containers, and pesticide residues must be conducted in a manner so as to comply with state laws and rules administered by the SDDA (SDCL § 38-21 and ARSD § 12:56:02). All pesticides may be disposed of by using them for legal purposes originally intended.

Pesticides and/or pesticide containers may not be stored or disposed of in such a manner so as to cause or allow:

Open dumping; or

Water dumping; or

Storage next to food or other articles intended for consumption by humans or animals.

Pesticides and /or pesticide residues may be disposed of by:

Returning pesticides to the manufacturer; or

Registering for collection by the SDDA; or

Disposed in a landfill designated to accept pesticides; or

By methods directly supervised by the SDDA.

Pesticides, pesticide residues, and/or pesticide containers considered to be hazardous waste shall be treated and disposed of in a manner prescribed by the SD Department of Environment and Natural Resources (DENR).

Pesticides considered to be unusable are recommended to be registered for collection by the SDDA.

Pesticide containers to be disposed of are to be triple rinsed or the equivalent, punctured, and disposed of by:

Storing and delivering to established collection sites maintained by the SDDA; or

Buried in an open field if the quantity of containers does not exceed one days usage or 50 United States pounds; or

Taken to a landfill specially design to accept pesticide containers.

Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). Anyone handling, using, or applying a pesticide must do so in accordance with labeling which accompanies the pesticide product. If product label information is required during preparation of pest management plans, specimen labels may be used but only as a guide. Specimen labels are available from:

Pesticide Product Manufacturers

SDDA
http://www.state.sd.us/doa/das/hp-pest.htm
http://www.kellysolutions.com/sd/pesticideindex.htm

US EPA –Office of Pesticide Programs
http://www.cdpr.ca.gov/docs/epa/m2.htm

Crop Data Management Systems SM
http://www.cdms.net/manuf/manuf.asp

Vance Crop Division
http://www.greenbook.net/index.html
http://www.bluebooktor.com/index.html

Please contact the SDDA for information regarding labels for pesticides distributed under “Emergency Use Exemption registration(s)’ (FIFRA – Section 18) and “Special Local Need Registration(s)” (FIFRA – Section 24(c).

Accurately measure and mix all pesticides. Mix only the amount needed to eliminate storing and disposing of excess. Triple rinse pesticide containers (or the equivalent) and empty the water used to rinse pesticide containers into the spray tank.

Dispose of leftover pesticides and containers according to label requirements and/or state law; never reuse the container for other purposes. Return unopened pesticides to the supplier.

Unusable Pesticide Collection – Pesticides that have been canceled, that are no longer in usable condition, or that are unidentifiable may be registered with the SDDA for free disposal. Please call the SDDA at 1-800-228-5254 for more information

Container Disposal – Plastic pesticide containers and steel drums may be recycled using the SDDA Pesticide Container Recycling

Program. The program is held every year during the months of July and August at selected sites. Call the SDDA at 1-800-228-5254 for more information.

Pesticide applicators must develop and follow a Pesticide Handling and Discharge and Response Plan. Guidance for Pesticide Handling and Discharge and Response Plans is available at SDDA.

http://www.state.sd.us/doa/das/Priv_res.pdf

Federal law requires that all Private Pesticide Applicators maintain records of all Restricted Use Pesticide applications for a minimum of two years. Information regarding record requirements may be obtained from the USDA-Agricultural Marketing Service, Office of Science and Technology at http://www.ams.usda.gov/science/ or the SDDA at 1-800-228-5254.

All commercial pesticide application records will be kept for a minimum of three years.

Assistance in achieving and maintaining compliance for activities pertaining to pesticides is available from the SDDA at http://www.state.sd.us/doa/das/Comp/index.htm or by calling 1-800-228-5254.

The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon, may also be given for non-emergency information:

1-800-858-7384
Monday - Friday
6:30 a.m. to 4:30 p.m. Pacific Time

Emergency Information

For advice and assistance with emergency spills and other emergencies that involve pesticides, use the following phone numbers:

Involving human health/injury:
911

Poison Control Center at Sioux Valley
1-800-222-1222

In South Dakota Emergency

Spills can be reported to:
SDDA: (605) 773-4432

In South Dakota call: 1-800-228-5254
http://www.state.sd.us/doa/das/spill.htm

Department of Environment and Natural Resources (SD DENR)
1-605-773-3151 (during business hours)
or
Division of Emergency Management:
1-605-773-3231 (24 hours a day)

National CHEMTREC: 1-800-424-9300
(24 hours a day)

REFERENCES

Specimen Pesticide Product Labels and information - Products registered for use in South Dakota

SDDA - Maintained for SDDA by Kelly Registrations Systems, Inc.
http://www.kellysolutions.com/sd/pesticideindex.htm

Products Currently Registered by the US EPA

United States EPA - Maintained by California EPA
http://www.cdpr.ca.gov/docs/epa/m2.htm

Product Information Retrieval Systems - Maintained by Third Party Service Providers

Crop Data Management Systems
CDMS Specimen Pesticide Labels and MSDS
http://www.cdms.net/manuf/manuf.asp
Vance Crop Division
Crop Protection Reference
http://www.greenbook.net/index.html
Turf and Ornamental Reference
http://www.bluebooktor.com/index.html

Pesticide Program Information and Compliance Assistance

United States EPA
Office of Pesticide Programs
Pesticides: http://www.epa.gov/pesticides/
South Dakota Department of Agriculture
Division of Agricultural Services
Pesticides:
http://www.state.sd.us/doa/das/hp-pest.htm

Non-Target Species Information

United States EPA
Office of Pesticide Programs- Endangered Species Program
South Dakota County Bulletins:
http://www.epa.gov/espp/s_dakota/s_dakota.htm
SDDA
Division of Agricultural Services
Pesticides:
http://www.state.sd.us/doa/das/hp-pest.htm

Commercial Apiaries
SDDA Division of Agricultural Services
South Dakota Apiary Locations
http://www.state.sd.us/doa/das/apiary_maps.htm

The Worker Protection Standard
http://www.state.sd.us/doa/das/Comp/worker_protection.htm

South Dakota Codified Law - Shallow aquifers as defined in SDCL 34A-3A-24
http://legis.state.sd.us/statutes/index.cfm?FuseAction=DisplayStatute&FindType=Statute&txtStatute=34A-3A-24